

ART. LIII.—Description of some New Zealand Lichens.

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Plate XXIII.

[Read before the Wellington Philosophical Society, 21st November, 1874.]

1. *Phlyctis egentior*, Nyl.

Thallus tenuissimus, livido-cineraceus, sat determinatus. *Apothecia* innata parva flavo-fusca rotundata aut difformia, margine thallino pulverulento cincta, disco plano brunneo sæpius pulverulento. *Spore* incolores falcatae 7-9-septatae, longit. 0·062 mm., crassit. 0·007 mm.

Ad cortices arborum.

Thallus very thin, livido-cineraceous, somewhat determinate. *Apothecia* innate, small, yellowish-brown, rounded or misshaped, bound by a powdery thalline margin. Spores colourless, falcate, 7-9-septate, length 0·062 mm., breadth 0·007 mm.

Differs from *Phlyctis andennis* and *P. brasiliensis* in the colour of the thallus, and probably, by the powdery thalline margin with which the apothecia are bound.

2. *Phlyctis neo-zelandia*, Nyl.

Thallus crustaceus, uniformis, albus, tenuis vel crassus, late expansus, rimosus, determinatus. *Apothecia* minuta, innata, maculiformi-difformia, concaviuscula, carnea, excipulo proprio nullo—nisi margine thallino spurio extus pulverulento—cincta. *Spore* incolores, vermiformi-cylindraceae, spiraliter curvatae, 7-11-septatae, longit. 0·07 mm., crassit. 0·005 mm.

Ad corticem arborum.

Thallus crustaceous, uniform, white, thin or thick, widely expanded, rimose, determinate. *Apothecia* minute, innate, concave, flesh-coloured, without a proper excipulum, surrounded by a pulverulent thalline margin. Spores colourless, spirally curved, 7-11-septate, 0·07 millim. long., 0·005 millim. thick.

On bark.

3. *Lecidea stellulata*, Taylor.

Thallus albidus, tenuissimus, areolato-diffractus, hypothallo nigro manifesto inter areolas. *Apothecia* sessilia, nigra. *Spore* fuscae vel nigrae, uni-septatae, longit. 0·01 mm., crassit. 0·006 mm.

Ad saxa.

Thallus white, very thin, areolate-diffractate, hypothallus black, visible between the areolae. *Apothecia* sessile, black. Spores brown or black, 1-septate, 0·01 millim. long., 0·006 millim. thick.

On rocks.

3*. *Lecidea parasema*, Ach.

L. parasema, Ach. (Nyl. in Lich. Scand. p. 217), described in Handbook N.Z. Fl., p. 584, I have not succeeded in collecting in New Zealand, and it is most likely that the common lichen, *L. myriocarpa*, DC., has been mistaken for it. This latter plant is common in New Zealand, although not described in the Handbook. The thallus is ashy-green, thin, subgranular, and determinate. The apothecia small and margined. Spores uniseptate, brown, 0·013 millim. long, and 0·008 millim. broad. Hypothecium black or obscurely brown.

Syn. *L. punctata*, Schoer. Exs. 197, and *L. punctata* g. *denudata*, Schoer. Exs. 529.

It is true that our lichen agrees with those in the collections of Leighton from Great Britain, and others from Germany and Scandinavia, under the name of *L. parâsema*, but in every specimen that I examined of those collections the character agrees with *L. myriocarpa*, to which species in fact they belong.

4. *Lecidea radomma*, Nyl. in litt.

Thallus cinereus, granulosis. *Apothecia* atra, superficialia, mediocria, plana, margine prominente. *Sporæ* octonæ, incolores, ellipsoideæ, biloculares, plerumque tubulo loculos jungente, longit, 0·025 mm., crassit. 0·015 mm. Stratum hypothecii subhymeniale fuscum, stratum excipulare album.

Ad cortices arborum.

Thallus ashy, granular. Apothecia black, superficial, medium size, flat, with prominent margin. Spores eight in each ascus, colourless, ellipsoid, bilocular, cells united by a tube, 0·025 millim. long, 0·015 millim. thick. Subhymeneal stratum brown, excipular stratum white.

On bark of trees.

Differs from *L. leucoplaca*, Chev., in the excipulum being white, and the spores mostly with a connecting tube between the cells.

5. *Lecidea marginiflexa*.

Montague considers this plant to be *L. tuberculosa*, Fée (Flora N.Z., p. 299). This is a mistake. Fée's lichen has multilocular spores, while *L. marginiflexa* has uniseptate spores and only one spore in each ascus.

Lecanora parella var. *implicata*.

Differs from the typical form in the thallus being neither granular nor warty, but rugose. In this it resembles a corticular specimen collected by J. P. Norlin at Tavastia Asikkala. The disk is more coloured than usual in Buchanan's specimen, and is convex or flat in the full grown apothecia, as is sometimes the case in *L. tartarea*. Specimens are seen in all stages between slightly rugose and warty. One, which Nylander has named *L. thelotremoides*, is clearly intermediate between *L. implicata* and *L. parella*.

Syn. *Lecanora implicata*, Stirton.

6. *Lecidea fusco-lutea*, Dickson.

Thallus albus, granulosus. *Apothecia* magna, sordide lutea vel liventia, plana, prominente marginata. *Asci* unam sporam oblongam grandissimam minutissime muricatum foventibus.

Thallus white, granular. Apothecia large, dull yellow or liver-coloured, disk flat with a prominent margin. Asci with one large muricated spore, 0.188 millim. long, 0.052 millim. thick.

The *Lecidea fusco-lutea* of Acharius has bilocular spores, the cells connected by a tube. See Schærer Exs. 215 (*L. ferruginea* b. *leucorrhœa*).

7. *Lecidea leucoplaca*, Chev.

Thallus cinereo-virescens, effusus, granulatus vel granulato-rugosus. *Apothecia* exserta, disco plano et margine prominente, stratum hypothecii subhymeniale et stratum excipulare nigra, lineo ochro-fusco disjuncta. *Spore* Snaë, incolores, ellipsoideæ, biloculares, longit. 0.025 mm., crassit. 0.012 mm.

Syn. *L. premnea*, Fries. *L. grossa*, Nyl. (in litt.) *L. maculosa*, Stirton *L. melastegia*, Nyl. *L. melachina*, Nyl. Leighton Exs. 125! 90!

Ad cortices arborum.

Thallus ashy-green, effuse, granular or granulo-rugose. Apothecia exserted, with flat disk and prominent margin, the subhymeneal stratum of hypothecium and excipular stratum black and separated by a yellowish-brown line. Spores 8 in each ascus, colourless, ellipsoid, bilocular, 0.025 millim. long, 0.012 millim. thick.

I have examined specimens in Mr. Buchanan's collection—whence Dr. Stirton's lichens were obtained—and find no difference between *L. maculosa*, Stirt., and *L. leucoplaca*, Chev. The measurements of the spores given by Dr. Stirton would answer for *L. parasema*, Nyl. Lich. Scand.

8. *Lecidea versicolor*, Fée, var. *subtuberculosa*, Knight.

Thallus subtuberculosus, pallido-stramineus. *Apothecia* sparsa, fusca, marginata, margine concolore. *Spore* pallido-luteæ, uniseptatæ, ovatæ, longit. 0.038 mm., crassit. 0.024 mm. Hypothecium pallido-flavidum.

Ad cortices.

Thallus subtuberculose, pale straw. Apothecia scattered, brown, margined; margin concolorous. Spores pale yellow, 1-septate, ovate, 0.038 millim. long, 0.024 millim. thick. Hypothecium pale yellow.

On bark of trees.

It is not unlikely that *L. taitensis*, Mont., and *L. versicolor*, Fée, are the same plant. If so the varieties in New Zealand are (1) *L. taitensis* with rugose thallus, and spores 0.075 mm. in length, and margin of apothecium much darker than the ashy-brown disk; (2) *L. versicolor* with pale border and brown disk, spores 0.05 mm. in length, hypothecium white, and thallus tuberculo-

isidiose; and (3) *L. taitensis* var. *subtuberculosa*, with smoother thallus, the disk and margin of the apothecium brownish-black, spores 0.033 mm. in length, and hypothecium pale yellow.

In *L. marginiflexa* the asci contain only one spore in each and that linear oblong and bilocular. In *L. fusco-lutea*, Dicks., also, the asci contain only one spore in each, but that is linear oblong or cylindrical, and minutely muricated.

8c. *Lecidea versicolor*, Fée.

Thallus albus, granulato-inæqualis vel granuloso-isidiosus. *Apothecia* disco fusco, et margine pallido, tumido, undulato. *Spore* uniseptatæ, ovatæ, incolores, longit. 0.05 mm., crassit. 0.023 mm. Hypothecium album.

Ad corticem arborum.

Thallus white, granulate, unequal, or granular-isidiose. Apothecia with brown disk, and pale tumid wavy margin. Spores 1-septate, ovate, colourless, 0.05 millim. long, 0.023 millim. thick. Hypothecium white.

9. *Lecidea taitensis*, Mont.

Thallus cineraceus vel eborinus, granulatus vel verrucoso-rugosus, passim rimulosus. *Apothecia* disco fumeo, et margine fusco-atro, tumido, undulato. *Spore* pallido-luteæ vel incolores, magnæ, ovatæ, incurviusculæ, uniseptatæ, longit. 0.075 mm., crassit. 0.035 mm. Stratum hypothecii subhymeniale incolore, perithecium fuscum.

Ad corticem arborum.

Thallus greyish or cream-coloured, granulate or warty rugose, here and there rimulose. Apothecia greyish-brown, and margin brownish-black, tumid, wavy. Spores pale yellow or colourless, large, ovate, little incurved, 1-septate, 0.075 millim. long, 0.035 millim. thick. Hymeneal stratum of hypothecium colourless; perithecium brown.

On bark.

10. *Lecanora contigua*, Ach., var. *meiospora*, Nyl.

Thallus albus vel cineraceus, areolatus, lineâ fuscâ limitatus. *Apothecia* sessilia, convexa, fusco-nigra, immarginata. *Spore* incolores, ellipsoideæ, longit. 0.014 mm., crassit. 0.008 mm. Hypothecium fusco-nigrum.

Ad saxa et supra terram argillaceam.

Thallus white or ashy-white, areolate or cracked, bounded by a dark line. Apothecia sessile, convex, brownish-black, immarginate. Spores colourless, ellipsoid, 0.014 millim. long, 0.008 millim. thick. Hypothecium brownish-black.

On rocks and clayey banks.

11. *Lecidea melanotropa*, Nyl.

Thallus fractus, granuloso-inæqualis vel granuloso-rimosus, in aliquot

exemplis sublævis, albidus vel pallido-cinereus vel cinereo-flavus. *Apothecia* nigra vel cæσιο-pruinosa vel cæσιο-pallentia, plana, demum convexa; margine obtuso, ceraceo-pallido, quandoque subconcolori. *Spore* incolores, ellipsoideæ, interdum incurvæ, sæpius utroque apice acutiusculæ, longit. 0·014 mm., crassit. 0·007 mm. Hypothecium incolor.

Ad cortices arborum.

Thallus cracked, unequally granular, or granuloso-rimose, sometimes rather smooth, white, or pale-ashy or ashy-yellow. Apothecia black or bluish pruinose, at length convex; margin broad, waxlike, pale, now and then of one colour with the disk. Spores colourless ellipsoid, sometimes incurved, often rather acute at either end, 0·014 millim. long, 0·007 millim. thick. Hypothecium colourless.

The character of the thallus and the colours of the apothecia vary greatly, but nevertheless nearly all the variations of the latter may be found in one and the same plant. The thallus varies according to the nature of the bark it grows on. A variety named by Dr. Nylander (in a letter) *Lecidea cæσιο-pallens*, Nyl., is best treated as a distinct variety.

12. *Lecidea planella*, Nyl. Syn. Lich. Novæ-Caledoniæ, p. 45.

Thallus cinereo-virescens, effusus, tenuissimus vel evanescens, et sæpius vix ullus. *Apothecia* adpressa vel peltata, albida vel carneo-pallida vel carneo-lutea vel carneo-cinnabarina, sæpius undulato-difformia; margine paulo dilutiore, evanescente, (latit. 0·1 mm. ad 0·25 mm.). *Spore* octonæ, uniseriales, incolores, fusiformes, uniseptatæ, longit. 0·008 mm., crassit. 0·002 mm. Paraphyses mediocres, apice clavato. Hypothecium incolor.

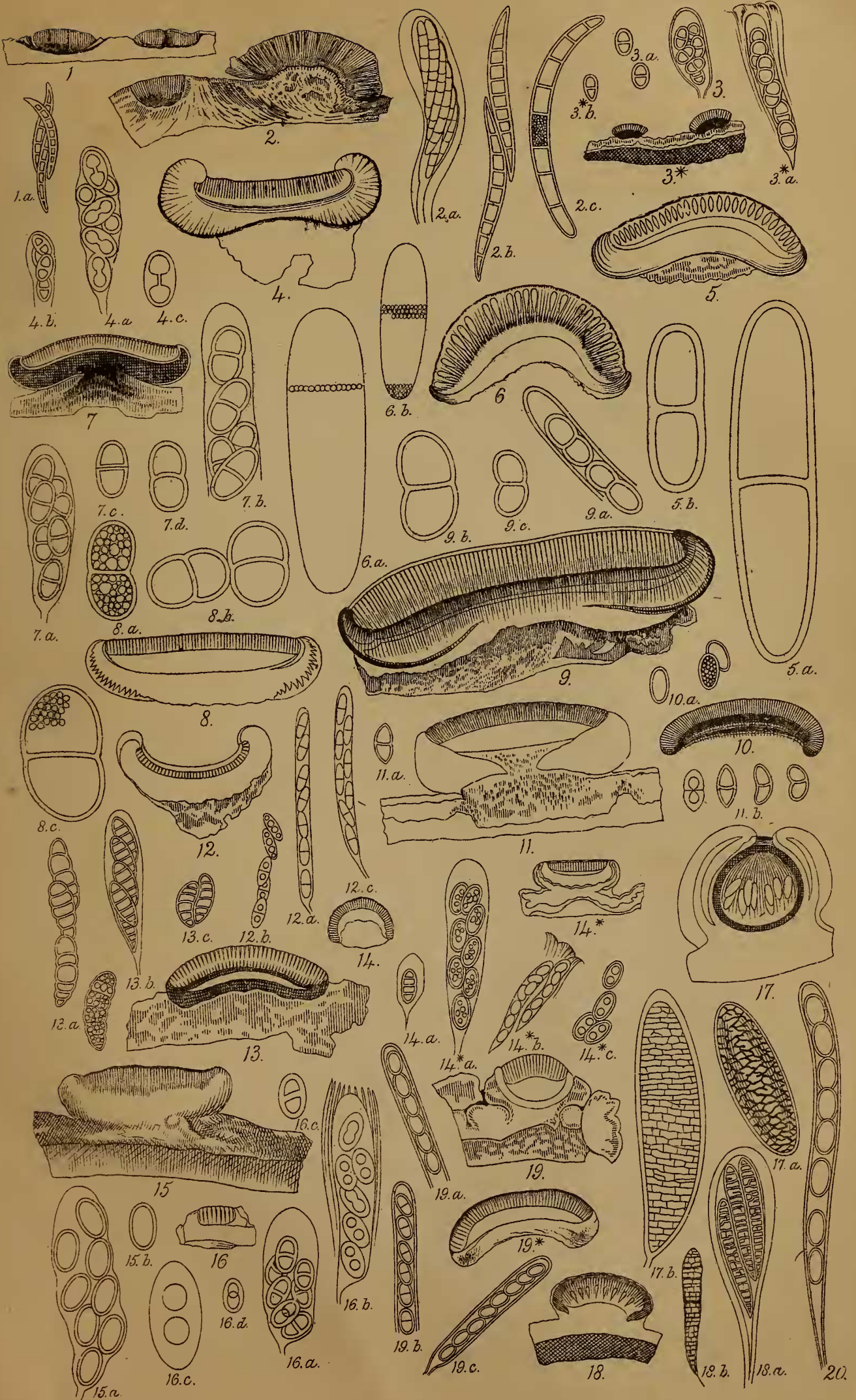
Ad cortices fruticium et filicium et supra muscos.

Syn. *Baomyces pertenuis*, Stirton. *Biatora cinnabarina*, Bab., Flora N.Z., p. 300.

Thallus ashy green, effuse, very thin, frequently scarcely any. Apothecia appressed or peltate, white or pale fleshy-coloured or fleshy-yellow or fleshy-cinnabar, often undulate and irregular in outline, margin somewhat paler, evanescent, (diameter 0·1. ad 0·25 mm.). Spores 8 in each ascus, in one row, colourless, fusiform, 1-septate, 0·008 millim. long, 0·002 millim. thick. Paraphyses club-shaped, apex nearly as broad as ascus.

On bark of shrubs and ferns, and on mosses.

I have no doubt that this is the *Biatora cinnabarina* of Babington (Flora N.Z., p. 300), and certainly the *Baomyces pertenuis* of Stirton. After examining specimens from Mr. Buchanan's collection, and numerous specimens in my own, I have met with no instance of spores with four cells in one case; there is an appearance of four divisions, but no more than one true septa. The lichen agrees in every particular with Nylander's description. The spores in plate 129 C., Flora N.Z., should be uniseptate.



13. *Lecidea plesia*, Knight.

Thallus ochroleucus, tenuis, areolo-rimosus. *Apothecia* nigra, plana, medio-ocria, elevato-marginata, margine flexuosa vel subanguloso-diformia. *Sporæ* lineari-clavatae, 4-5-septatae, incolores vel diluto-fuscentes, longit. 0·032 mm., crassit. 0·011 mm. Hypothecium nigrum.

Ad saxa.

Thallus pale ochrey colour, thin, divided into areolæ by chinks. Apothecia black, plane, medium size; margin raised, flexuose or subangularly deformed. Spores linear, clavate, 4-5-septate, colourless or pale brown, 0·032 millim. long, 0·011 millim. thick. Hypothecium black.

Differs from *L. contigua* in colour of thallus and the multilocular, lineari-clavate spores; from *L. sabuletorium*, whose spores are elongate fusiform.

14. *Lecidea allotropa*, Nyl.

Thallus continuus, tenuissimus, cineraceus. *Apothecia* sessilia, planiuscula, demum convexa, immarginata, nigra, sat parva. *Sporæ* oblongæ, 3-septatae, longit. 0·015 mm., crassit. 0·006 mm. Stratum hypothecii subhymeniale incolore, stratum inferiore album.

Thallus continuous, very thin, greyish. Apothecia sessile, flat, at length convex, immarginate, black, rather small, spores oblong, 3-septate, 0·015 millim. long, 0·006 mm. thick. Subhymeneal stratum of the hypothecium colourless, the inferior white.

14.* *Pannaria periptera*, sp. n.

Thallus monophyllus, plumbeus, orbicularis, e laciniis linearibus ferme adpressis flabelliformibus multifidis radiantibus compositus, centro concreto. *Apothecia* rubro-fuscentia, plana, margine duplici cincta, (excipulo a thallo crenulo marginato). *Sporæ* incolores, ellipsoideæ, simplices, longit. 0·013 mm., crassit. 0·0075 mm.

Ad cortices arborum.

Thallus monophyllous, lead colour, round, formed of linear, firmly pressed, fan-shaped, radiating laciniae, coalesced in centre. Apothecia reddish-brown, flat, bound by double margin—the proper excipulum surrounded by a crenulate thalline margin. Spores colourless, ellipsoid, simple, 0·013 millim. long, 0·0075 mm. thick.

On bark of trees.

Named by Dr. Nylander (in a letter) *Coccocarpia periptera*. One of the most distinctive characters of the *Coccocarpiæ* is the adnate, immarginate apothecia; it would, therefore, be unsatisfactory to place among the species of that genus a lichen with two distinct raised margins to the apothecia—a thallocal one enclosing a sharply defined excipulum. It is true that like *C. smaragdina* the thallus is furnished with gonimia in lieu of gonidia; but

both *Pannaria* and *Coccocarpia* agree in that character. As to our lichen being monophyllous, this is a very uncertain and questionable character. Many specimens of it can no more be considered monophyllous than *P. rubiginosa*, which latter has never been treated as a *Coccocarpia*, although its close ally *C. plumbea*, Nyl., is by Nylander. I agree with Dr. Lauder Lindsay that Nylander's arrangement, which separates *P. rubiginosa* from *P. plumbea*, is a most artificial and unnatural one (*vide* Trans. Roy. Soc. Edinb., vol. xxii part 1. p. 256).

15. *Lecanora flavo-pallescens*, sp. n.

Thallus tenuis, subgranulosus, flavo-albicans, interdum evanescens. *Apothecia* biatorina, disco fulvo plano tandem tumido, marginem pallidum levem demum excludente. *Sporæ* simplices, incolores, longit. 0·015 ad 0·02 mm., crassit. 0·01 ad 0·013 mm.

L. flavo-pallescens, Nyl. in litt.

Ad ligna. Grandibus sporis satis dignoscitur.

Thallus thin, subgranular, yellowish-white, sometimes evanescent. Apothecia biatorine, buff or tawny, disk flat, at length tumid, overlapping the pale smooth thalline border. Spores simple, colourless, 0·015 to 0·02 millim. long, 0·013 millim. thick. Closely allied to *L. varia*, if not a variety. The specimens with tumid apothecia resemble *L. symmetrica*, but differ from it and from all varieties of *L. varia* in the smooth thalline border of the apothecia, and especially in the much larger size of the spores, which in none of the varieties of *L. varia* in Leighton, Schœrer, and several German collections that I have examined, exceed 0·011 mm. in length. *L. varia* is a most polymorphous species. The numerous varieties may be arranged in four sets.

(1). Those with larger apothecia crowded together, with bold granular flexuose or angular margin, growing on wood, viz:—*Parmelia varia*, Ehrh. var. *vulgaris*, Korb., Leight., Exs. 51; *Lecanora varia* var. *pallescens*, Schœr., Exs. 325.

(2). Those with minute apothecia, with pallid powdery margin and flat disk, sometimes a little convex, viz:—*Lecanora varia* var. *hypopta*, Ach.; *L. aitema*, Ach.; *L. apocræa*, Ach.; *L. sarcopis*, Ach.; *Parmelia varia*, Leight., Exs. 176.

(3). Those with tumid apothecia, viz:—*Lecanora varia* var. *symmetrica*, and other varieties.

(4). *Lecanora varia* var. *polytropa*, with its varieties, growing on stones.

16. *Lecanora thiomela*, Nyl.

Thallus crustaceus, citrinus, areolatus, areolis hypothallum fuscum obtegentibus, linea fusca limitatus. *Apothecia* minuta, cupulæformia, marginata, nigra, margine thallino citrino cincta. *Sporæ* fuscentes, ellipsoideæ, uni-septatæ,

longit. 0·017 mm., crassit. 0·01 mm.

Ad saxa.

Thallus crustaceous, citrine, areolate, areolæ covering the brown hypothallus, bordered by a dark line. Apothecia minute, black, bound by a citrine-coloured thalline margin. Spores brown, ellipsoid, 1-septate, 0·017 millim. long, 0·01 millim. thick.

17. *Ascidium melanosporum*, sp. n.

Thallus crustaceus, verrucosus, eborinus. *Apothecium* hemisphericum, apice depresso-umbilicatum. *Perithecium* nigrum, globosum, apice poro pertusum. Nucleus paraphysibus tenuibus farctus. Thecæ mono-sporæ. *Spora* magna, fusiformis, multicellulosa vel muricata, demum fusca, opaca, longit. 0·18 ad 0·25 mm., crassit. 0·065 ad 0·09 mm.

Ad corticem arborum.

Thallus crustaceous, verrucose, cream-coloured. Apothecium hemispherical, depressed at the apex. Perithecium black, globose, opened by a pore at the apex. Nucleus with slender paraphysis. Theca 1-spored. Spore large, fusiform, many-celled or muricated, at length brown, opaque, 0·18 to 0·25 millim. long, 0·065 to 0·09 millim. thick.

On bark of trees.

Differs from *A. domingense* and *A. cinchonarum*, in the spores being irregularly cellular, much broader, and at length quite opaque. (*Vide* Tab. 1, fig. 20, Nyl. Prod. Flores Novo-Granatensis, Lichenes.)

18. *Melaspilea metabola*, Nyl. Lich. Novæ Caledoniæ, p. 69.

Thallus cinereus, diffracto-rimosus vel areolatus, tenuissimus. *Apothecia* nigra vel fusca, mediocria, rotundato-lecideoidea (juniora punctiformia), convexa, immarginata, intus pallido-incoloria. *Sporæ* incolores, cylindraceæ, inferne magis attenuatæ et curvatulæ (sæpe in capillam productæ), murali-divisæ, longit. 0·075 ad 0·1 mm., crassit. 0·01 mm.

Ad cortices arborum.

Thallus ashy, cracked or areolate, very thin. Apothecia black or brown, medium size, rotundato-lecideoid—younger mere spots—convex, immarginate, pale within. Spores colourless, cylindrical, curved, attenuated below, often terminating in a hair, muriculate, 0·075 to 0·1 millim. long, 0·01 millim. thick.

On bark.

19. *Squamaria perrugosa*, Nyl.

Thallus cinereo-fuscus vel cinereo-rufescens, adpressus, tessellato-areolatus, areolis in centro depressis, versus peripheriam laciniato-divisus, laciniis pterygioideo-expansis. *Cephalodia* cerina vel ochraceo-rufescentia, demum in radios fissa. *Apothecia* ochro-badia, concava; excipulum proprium marginem

thallinum cinctum. *Sporae* uniseriales, incolores, ellipsoideæ, simplices evl perrarò biloculares, longit. 0·013 mm., crassit. 0·008 mm.

Ad saxa.

Thallus ashy-brown or ashy-red, closely adhering to matrix, tessellato-areolate, areolæ depressed in centre, divided towards circumference into laciniaë, laciniaë expanded, wing-like. Cephalodia dull yellow or yellowish-red, at length split into rays. Apothecia yellowish-brown, concave. Proper excipulum surrounded by thalline border. Spores in a single row, colourless, ellipsoid, simple, or very rarely 2-celled, 0·013 millim. long, 0·008 millim. thick.

Syn. *Squamaria thaumasta*, Stirton.

Section of apothecium shows the proper excipulum of a pale colour, bound by a thalline border.

20. *Squamaria perrugosa*, Nyl., var. *neglecta*, Knight.

Thallus cinereo-albescens, granulato-verrucosus, crustaceo-adnatus, centro confusus, versus peripheriam lobulo-crenatus vel pterygioideo-expansus. *Apothecia* rosea, farinosa, margine thallino crasso, tumido, farinoso, obsolete crenato cincta. *Cephalodia* convexa, irregulariter fissa. *Asci* prælongi, angusti. *Sporae* uniseriales, octonæ, ellipsoideæ, simplices, pellucidæ, longit. 0·027 mm., crassit. 0·013 mm.

Ad saxa.

Similis *L. perrugosæ*, sed sporis subgrandibus facile ab eo distinguitur.

Thallus greyish-white, granulate with warts, closely attached to matrix, centre confused, towards circumference lobulato-crenate, or outspread wing-like. Apothecia rose-coloured, farinaceous, bordered by a thick, swollen, obsoletely crenate margin. Cephalodia convex, irregularly split. Asci very long and narrow. Spores in one row, ellipsoid, simple, pellucid, 0·027 millim. long, 0·013 mm. thick.

On rocks.

Differs from the typical form in the larger size of the spores, and the characters of the thallus.

Lecidea campylospora, Stirton, is the *Lecanora taitensis*, Mont., as determined for me some years since by Dr. Nylander.

Lecidea maculosa, Stirton, is the *L. leucoplaca*, Chev. ; *L. premnea*, Fries. ; *L. grossa*, Nyl. in litt. ; *L. melastegia*, Nyl. Leighton's Exs. 90 ! 125 !

Melaspilea amphorodes, Stirton, is the *M. metabola*, Nyl. Syn. Lich. Nov. Cal. p. 69.

Lecidea (Lecanora?) implicata, Stirton, is the *Lecanora thelotremoides*, Nyl. in litt.

Astrothelium prostratum, Stirton, is the *A. ochrocleistum*, Nyl. in litt.

NOTE.—In reference to Dr. Stirton's description of certain New Zealand lichens, published in the Transactions of last year, page 235, I find that the *Bæomyces pertenuis*, Stirton, is the *Lecidea planella*, Nyl., described in Dr. Nylander's Synopsis Lichenum Novæ Caledoniæ, p. 45.

Psoroma implexa, Stirton, is the *P. sphinctrina* var. *pholidotoides*, Nyl. Journ. Linn. Soc. p. 244. A careful examination of specimens of Dr. Stirton's lichen in the collection of Mr. Buchanan discloses no difference between them and Dr. Nylander's description. It grows on bark or trees, not on rocks as (inadvertently?) stated in Dr. Stirton's description. It is to be observed that the same specimen may exhibit here and there simply a broad black boundary line, and in other parts coarse black dendritic radiating fringe.

Psoroma arthrophyllum, Stirton. This is a coarse variety of *P. subpruinatum*, Nyl. Like many common lichens the *P. subpruinatum* has many varieties. They all agree in one respect—their spores are spherical or oval, with no tendency to be pointed at the ends. In the same ascus are often found both descriptions of spores intermixed. In such instances it may be that the spherical appearance is due to the spore lying transversely in the ascus, when it would be seen "end on,"—but I am not sure that such is ever the case.

Squamaria thaumasta, Stirton. This is the *Sq. perrugosa*, Nyl., of which a full and excellent description is given by Dr. Nylander in the Linnean Journal above quoted. The scales of the thallus instead of being umbate are most frequently somewhat depressed in the centre. The spores are strictly uniseriate and simple. Very rarely an uniseptate spore may be met with. This lichen is closely allied to *Sq. gelida*, Linn.

These and most other lichens cannot be satisfactorily studied without the aid of a microscope. The dimensions and figure of the spores, the distinction between *gonidia* and *gonimia* of Nylander, and other differences, can only be determined by a good microscope. Dr. Hooker in the Handbook of the N.Z. Flora, especially alludes to the excellent specific characters afforded by the spores, but it would, he adds, take many months of microscopic study to ascertain accurately the size of the spores of New Zealand lichens. He has in numerous instances given references to Dr. Nylander's works where the dimensions are given. I have taken the measurements of the spores of most of the New Zealand lichens, and find them to agree with those stated by Dr. Nylander in his work on the Lichens of Scandinavia.
